

In the claims:

Please amend the claims as shown on the appended replacement claim set. A set of claims showing each change made is also appended. Specifically, claims 1, 8, 14 and 21 have been amended.

REMARKS

This amendment is in response to the Office Action mailed September 24, 2002. Applicant expresses appreciation to the Examiner for careful consideration of the subject patent application. Claims 4, 5, 7, 9, 11-13, 17-20, and 23-26 were withdrawn from consideration by the Examiner. Claims 1-3, 6, 8, 10, 14-16, 21 and 22 were rejected. Claims 1, 8, 14 and 21 have been amended to more clearly define the subject matter of the present invention. Claims 1-3, 6, 8, 10, 14-16, 21 and 22 remain under consideration in the application.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 6, 8, 10, 14 and 16 (including independent claims 1, 8 and 14) were rejected under 35 U.S.C. § 102(b) as being anticipated by Sweden Patent No. 172,026 to Cednas (Cednas).

While the Examiner rejected defendant claims 6, 10 and 16, in order to most succinctly explain why the claims as presented are allowable, Applicant will direct the following remarks

primarily to the amended independent claims 1, 8 and 14 with the understanding that once an independent claim is found to be allowable, all claims depending there from are allowable as they are more narrow in scope.

Cednas teaches a helicopter having a clearly smaller, apparently non-teetering upper "rotor" 3 and a clearly larger, lower rotor 1. See, particularly, FIGs. 1 and 3. In contrast, claim one sets forth teetering first and second rotors.

In the art of record where a counter rotating propulsion device is combined with a rotor in each case it is non-teetering as far as applicant can discern. In other words, the disk through which the propulsion device turns is not intended to tip with respect to the shaft on which it is mounted. The "rotor" 3 in the cited reference apparently has collective pitch control, but the hub appears to be fixed. As amended, Claim 1 distinguishes over the art, and is patentable for at least this reason. Reconsideration is requested.

As mentioned, the art of record, including the Cednas reference teaches a smaller diameter rotating propulsion device combined with a rotor having cyclic pitch control, in those devices where such is provided. While not a true rotor in the sense of a tipable disk, the smaller rotor of the Cednas reference does appear to have a collective pitch control and

appears to be, in essence, a variable pitch propeller of much smaller diameter than the lower rotor.

In Contrast, amended independent claims 8 and 14 each set forth "a helicopter having a coaxial rotor set, which includes a first rotor carried by a first shaft and having a first diameter, a second rotor carried by a second shaft and having a second diameter which is substantially equal to said first diameter; wherein the first rotor is configured for cyclic pitch control, and the second rotor does not have cyclic pitch control." Pitch and roll control of the is accordingly effected by cyclic pitch control of the first rotor.

Cednas does not teach a rotor set having rotors with substantially the same diameter in combination with only one rotor providing cyclic pitch control. A feature common to all references cited against the application where there are counter-rotating rotors (in some cases solely for the sake of argument taking it that a non-teetering "propeller" can be characterized as a rotor, which is a point applicant does not concede) and cyclic control on only one rotor, is that the cyclically controllable rotor is considerably larger than the non-cyclically controllable one. This is in accordance with conventional notions that coaxial rotor sets where the rotors are of close to the same size should both have cyclic, so that they tip together, etc.

The invention as set forth in the claims provides an advantage of simplified control. As discussed on page 35, lines 6-8, of the present specification, "the coaxial helicopter described herein has a smaller diameter rotor than that of conventional designs, and higher disk loading. An advantageous trade-off that can be exploited is that variation of rotor thrust by variation of motor speed alone is easier, as there is less lag time required to increase or decrease rotational speed of the smaller-diameter rotors."

By reducing the size of the rotors and optimizing the power generated by the rotors by providing rotors with substantially the same diameter, combined with cyclic blade pitch control on one rotor only, the present invention provides an advantage not disclosed in or taught by the prior art, namely a simplified control scheme for coaxial rotorcraft. Therefore, for these reasons and the fact that the cited reference does not disclose all the elements of the amended claims, Applicant respectfully submits that amended 1, 8 and 14 are allowable over Cednas, and urges the Examiner to withdraw the rejections. Again, reconsideration is requested.

Claim Rejections - 35 U.S.C. § 103

Claims 2, 3, 15, 21 and 22 (including independent claim 21) were rejected under 35 U.S.C. § 103(a) as being unpatentable over

Cednas in view of German Patent No. 1,556,795 (Muller). The Examiner stated that "it would have been obvious to one skilled in the art at the time the invention was made to have used yaw paddles in Sweden's [Cednas'] system as taught by German [Muller] to create greater yaw control."

Claim 21 is patentable over the cited references and the art of record for the reasons set forth above. Neither reference teaches or suggests the combination set forth in the amended claims. In fact, they teach away, each disclosing a larger rotor with cyclic, and a smaller propeller-like propulser without cyclic blade pitch control (See English translation of German Abstract). Neither of these references teaches providing rotors with substantially the same diameter. In fact, of the prior art of record, none of the references disclose providing a rotor set with rotors having substantially the same diameter in combination with cyclic pitch control provided to only one of the rotors.

Thus, for a period of over 70 years, the prior art consistently teaches that accepted wisdom is to provide a rotor set with a) teeterable (tipable) upper and lower rotors or b) upper and lower rotors of the same size, with cyclic pitch control to either i) none of the rotors (See German Pat. No. 750,975), or to ii) both of the rotors. In the relevant case *In re Hedges*, the court found that proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. (*In re Hedges*,

713 F.3d 7631, 743, Fed. Cir. 1986). Because the rotor configuration of the present invention is in contrast to the accepted wisdom in the art, it would not be obvious to one skilled in the art to provide the combination set forth in the amended claims.

Therefore, Applicant respectfully submits that for at least these reasons independent claim 21, as well as the other independent claims are allowable over the cited references, and urges the Examiner to withdraw the rejections.

CONCLUSION

Pending claims 1-3, 6, 8, 10, 14-16, 21 and 22, as amended, are now in condition for allowance. Applicant respectfully requests that the rejections and objections be withdrawn, and that the claims be allowed, and the application passed to issue.

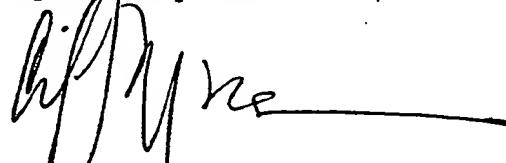
Moreover, it is respectfully submitted that the claims as amended are allowable and generic to claims withdrawn from consideration. Reconsideration of said withdrawn claims upon allowance is requested.

If any impediment to the allowance of these claims remains after entry of this Amendment which is amenable to resolution by telephone interview, the Examiner is encouraged to contact Clifton Thompson or Vaughn North at (801) 566-6633 so that such matters may be resolved as expeditiously as possible.

No extension of time in which to respond to the Office Action is necessary, nor have any new claims been added; therefore, no additional fee is due. The Commissioner is hereby authorized to charge any additional fee or to credit any overpayment in connection with this Amendment to Deposit Account No. 20-0100.

DATED this 24th day of December, 2002.

Respectfully submitted,



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